

## **AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions and listings of claims in the application.

### **LISTING OF CLAIMS**

Claims 1 – 11 canceled

12. (currently amended) A method for forming energy absorbing components for vehicles, the method comprising:

mixing a combination having a polymeric material resin and a blowing agent;

heating the combination after the mixing step to form a liquefied combination;

pressurizing the liquefied combination to prevent substantial expansion of the liquefied combination prior to injection;

cooling a mold operable to receive the liquefied combination; ~~and~~

injecting the liquefied combination into the mold to operably form an energy absorbing component of a vehicle[[-]] ;

initiating motion of a ram to perform the injecting step;

changing a ram progression speed during the injecting step; and

varying a rate of injection flow of the liquefied combination into the mold during the injecting step.

13. canceled)

14. (original) The method of Claim 12, comprising maintaining a surface temperature of the mold at or below an ambient temperature prior to the injecting step.

15. (original) The method of Claim 12, comprising:  
maintaining a continuous coolant flow to the mold;  
retaining the energy absorbing component in the mold for approximately one minute after the injecting step; and  
removing the energy absorbing component from the mold.

16. (original) The method of Claim 12, comprising:  
connecting a source of chilled water to the mold; and  
directing a chilled water volume to the mold to assist cooling the mold.

17. (previously presented) A method for forming energy absorbing components for vehicles, the method comprising:  
mixing a combination having a polymeric material resin and a blowing agent;  
heating the combination to form a liquefied combination;  
pressurizing the liquefied combination to prevent substantial expansion of the liquefied combination prior to injection;

cooling a mold operable to receive the liquefied combination;  
injecting the liquefied combination into the mold to operably form an  
energy absorbing component of a vehicle; and  
inserting at least one coolant pin through the mold to operably contact the  
component.

18. (original) The method of Claim 17, comprising:

connecting a source of coolant gas to the coolant pin; and  
flowing a coolant gas into the component through the coolant pin.

19. (original) The method of Claim 18, comprising pre-chilling the coolant gas  
prior to the flowing step.

20. (currently amended) A process to produce an energy absorbing material, comprising:

predetermining a wall thickness for an energy absorbing component;

forming a mold for the energy absorbing component;

mixing a combination having a polymeric material resin and a blowing agent;

heating the combination after the mixing step to form a liquefied combination;

transferring the liquefied combination into a mold; and

cooling the mold using one of an ambient temperature and a below ambient temperature coolant;

positioning at least one coolant injection pin in the mold in fluid communication with the liquefied combination in the mold;

controlling a temperature, a pressure and an injection rate of the liquefied combination to operably form a foam part having the predetermined wall thickness:

21. (original) The process of Claim 20, comprising selecting the wall thickness within a range of wall thicknesses varying between approximately 4.0 mm and approximately 50 mm.

22. (previously presented) A process to produce an energy absorbing material, comprising:

predetermining a wall thickness for an energy absorbing component;  
selecting the wall thickness of approximately 6 mm;  
forming a mold for the energy absorbing component;  
mixing a combination having a polymeric material resin and a blowing agent;  
heating the combination to form a liquefied combination;  
transferring the liquefied combination into a mold; and  
controlling a temperature, a pressure and an injection rate of the liquefied combination to operably form a foam part having the predetermined wall thickness.

23. canceled

24. canceled

25. (currently amended) The process of Claim 24 20, comprising flowing an inert gas into the coolant injection pin and through the coolant injection pin into the liquefied combination to operably cool and expand the liquefied combination.

26. (currently amended) The process of Claim 23 20, comprising controlling a mold cycle time to less than ten minutes.

27. (currently amended) The process of Claim ~~23~~ 20, comprising cooling both the mold and the foam part to operably provide a mold cycle time of approximately one minute.

Claims 28 – 37 canceled

38. (currently amended) The method of Claim 12, further comprising:  
~~providing a ram to inject the liquefied combination;~~  
~~initiating a motion of the ram; and~~  
changing a the ram progression speed during the injecting step to provide at least two non-zero ram progression speeds.

39. (currently amended) The method of claim 12, further comprising:  
connecting a screw threaded shaft to a the ram;  
rotating the screw threaded shaft to initiate a ram travel; and  
changing a the progression speed of the ram during the injecting step  
such that the ram progression speed is different during at least three portions of the ram travel.